Serial No. 09/841,451

IN THE SPECIFICATION:

Please amend paragraph **[0009]** as follows:

[0009] Infrared type gas sensors that are configured to substantially simultaneously measure the amounts of more than one type of gas in the respiration of a patient are also known. One such sensor, disclosed in U.S. Patent 5,296,706 (hereinafter "the '706 Patent), issued to Braig et al. on March 22, 1994, includes a plurality of discrete channels for facilitating the independent detection of six or more different anesthetic agents. The article, Burte, E.P. et al., "Microsystems for measurement and dosage of volatile anesthetics and respirative gases in anesthetic ~~equipment",~~ equipment," MEMS 98 Proceedings., The Eleventh Annual International Workshop on Micro Electro Mechanical Systems, ~~Pages~~ pages 510-514 (1998) (hereinafter "the Burte Article"), discloses, among other things, a mainstream, multichannel sensor apparatus that is configured to simultaneously measure the amounts of a combination of anesthetic gases in the respiration of a patient.

Please amend paragraph **[0015]** as follows:

[0015] U.S. Patent 5,693,944 (hereinafter "the '944 Patent"), issued to Rich on December 21, 1997, the disclosure of which is hereby incorporated herein in its entirety by this reference, discloses a cuvette, a method for using the same, and a method for manufacturing the same. The cuvette and methods of use disclosed in the '944 Patent eliminate the problems that were previously encountered in attempts to use polymers in the place of sapphire windows. The '944 Patent discloses fashioning windows from a malleable homopolymer, such as biaxially oriented polypropylene, in the thickness range of 0.001 to 0.005 ~~inches~~ inch. The use of this inexpensive polypropylene material allows for the fabrication of single-use, disposable cuvettes.

Please amend paragraph **[0019]** as follows:

[0019] Respiratory flow measurement during the administration of anesthesia in intensive care environments and in monitoring the physical condition of athletes and other individuals prior to and during the course of training programs and medical tests provides

valuable information for assessment of pulmonary function and breathing circuit integrity. Many different technologies have been applied to create a flow meter that meets the requirements of the critical care environment. Among the flow measurement approaches which have been used are:

1) **Differential Pressure** - measuring the pressure drop or differential across a resistance to flow;

2) **Spinning Vane** - counting the revolutions of a vane placed in the flow path;

3) **Hot Wire Anemometer** - measuring the cooling of a heated wire due to airflow passing around the wire;

4) **Ultrasonic Doppler** - measuring the frequency shift of an ultrasonic beam as it passes through the flowing gas;

5) **Vortex Shedding** - counting the number of vortices that are shed as the gas flows past a strut placed in the flow stream; and

6) **Time of Flight** - measuring the arrival time of an impulse of sound or heat created upstream to a sensor placed downstream.

Each of the foregoing approaches has various advantages and disadvantages, and an excellent discussion of most of these aforementioned devices may be found in W.J. Sullivan, G.M. Peters, P.L. Enright, M.D, "Pneumotachographs: Theory and Clinical ~~Application",~~ Application," Respiratory Care, July 1984, Vol. 29-7, pp. 736-49, and in C. Rader, Pneumotachography, a report for the Perkin-Elmer Corporation presented at the California Society of Cardiopulmonary Technologists Conference, October 1982.

Please amend paragraph [0067] as follows:

[0067] Porphyrins are an example of a material that may be used as luminescable material 232. Porphyrins are stable organic ring structures that often include a metal atom. When the metal atom is platinum or palladium, the phosphorescence decay time ranges from about 10 μs to about 1,000 μs. Porphyrins are also sensitive to molecular oxygen. When porphyrins are used as luminescable material 232, it is preferred that the porphyrins retain

substantially all of their photo-excitability with repeated use. Stated another way, it is preferred that the porphyrins ~~be "photostable".~~ "photostable." Fluorescent porphyrins, such as meso-tetraphenyl porphines, are particularly photostable. The various types of porphyrins that may be used as luminescable material 232 to facilitate oxygen detection include, without limitation, platinum meso-tetra(pentafluoro)phenyl porphine, platinum meso-tetraphenyl porphine, palladium meso-tetra(pentafluoro)phenyl porphine, and palladium meso-tetraphenyl porphine. Of course, other types of luminescable materials that are known to be quenched upon being exposed to oxygen, carbon dioxide, or another analyzed substance (*e.g.*, gas, liquid, or vapor) may also be used in airway adapters incorporating teachings of the present invention.

Please amend paragraph **[0078]** as follows:

[0078] Transducer housing 22 also contains at least a portion of a detector 258 positioned to receive radiation emitted from luminescable material 232 and configured to measure an intensity of such emitted radiation. Accordingly, detector 258 is positioned toward window 234 and toward luminescable material 232. Preferably, a filter 259 is disposed between luminescable material 232 and detector 258 so as to prevent wavelengths of electromagnetic radiation other than those emitted from luminescable material 232 from interfering with the luminescence and luminescence quenching measurements obtained with detector 258. Other features and advantages of a luminescence quenching type sensor that may also be employed in the present invention are disclosed in U.S. ~~Patent applications Serial No. 09/128,897,~~ Patents 6,815,211 and 6,325,978, filed on August 4, 1998, ~~and Serial No. 09/128,918, filed on August 4, 1998~~, both of which have been assigned to the same assignee as the present invention, the disclosures of which are hereby incorporated herein in their entireties by this reference.

Please amend paragraph **[0105]** as follows:

[0105] Airway adapter 20′ also includes one or more mirrors ~~41′~~ 41a′, 41b′ (FIG. 14) that are positioned so as to facilitate measurement of the amounts of one or more of oxygen, carbon dioxide, and anesthetic agents in the respiration of an individual through window 40′. As

depicted, airway adapter 20′ includes ~~one mirror 41′, which facilitates~~ mirrors 41a′, 41b′, which facilitate collection of measurements that are indicative of an amount of carbon dioxide and/or an anesthetic agent in an individual's respiration. By way of example only, ~~mirror~~ each mirror 41′ may be shaped or positioned within flow passage 34 so as to reflect radiation that has been introduced into flow passage 34 through window 40′ and that has traversed at least a portion of the distance across flow passage 34 back through window 40′. Of course, mirror 41′ may actually comprise a group of mirrors or other optical elements (*e.g.*, filters, lenses, etc.) or known types to facilitate the direction of radiation of particular wavelengths to the appropriate locations.

Please amend paragraph [0106] as follows:

[0106] As depicted in FIG. 14, a transducer housing 22′ that is configured to be assembled with airway adapter 20′ includes a radiation source ~~256~~ 256′ and a corresponding luminescence detector ~~258~~ 258′. Radiation source ~~256~~ 256′ emits at least one wavelength of electromagnetic radiation that will excite luminescable material 232. Radiation source ~~256~~ 256′ is positioned to introduce one or more wavelengths of excitation radiation through window 40′ and onto luminescable material 232. At least a portion of the radiation that is emitted from luminescable material 232 is then received by luminescence detector ~~258~~ 258′. Luminescence detector ~~258~~ 258′ detects at least one wavelength of radiation emitted from luminescable material 232 that indicates an amount of oxygen present in respiration or another gas mixture flowing through flow passage 34.

Please amend paragraph [0107] as follows:

[0107] Transducer housing 22′, as shown in FIG. 14, may also carry an infrared emitter 252 and an infrared detector 254. Infrared emitter 252 emits one or more wavelengths of radiation that are useful for detecting an amount of carbon dioxide, an anesthetic agent, or another gas or vaporized material that is present in respiration or another mixture of gases located within flow passage 34′. As shown, infrared emitter 252 is positioned to direct the one or more wavelengths of radiation into window 40′, at least partially across flow passage 34′, and toward

mirror ~~41'~~ 41a', 41b'. Mirror ~~41'~~ 41a', 41b' then reflects the one or more wavelengths of radiation back toward a location of window 40' where the radiation will be received or sensed by infrared detector 254.

Please amend paragraph **[0110]** as follows:

[0110] When an airway adapter 20, 20' incorporating teachings of the present invention includes luminescable material 232, the material or materials from which airway adapter 20, 20' and transducer housing 22, 22' are formed preferably prevent luminescable material 232 from being exposed to wavelengths of ambient light which may excite luminescable material 232 (*i.e.*, the material or materials are opaque to such wavelengths of radiation). Additionally, the material or materials of airway adapter 20, 20' and transducer housing 22, 22' preferably prevent luminescence detector 258 from being exposed to the same wavelengths of ambient radiation that luminescable material 232 emits upon being excited and that are quenched, or reduced in intensity, to a degree that is representative of an amount of oxygen or another analyzed gas or vaporized material to which luminescable material 232 is exposed. One or both of airway adapter 20, 20' and transducer housing 22, 22' may also be equipped with light sealing elements or optical filters that further prevent luminescable material 232 and luminescence detector ~~258~~ 258, 258' from being exposed to undesirable wavelengths of ambient radiation.

Please amend paragraph **[0111]** as follows:

[0111] It is also preferred that the material or materials from which airway adapter 20, 20' and transducer housing 22, 22' are formed do not emit or fluoresce wavelengths of radiation that would either excite luminescable material 232 or be emitted therefrom upon exposure of airway adapter 20, 22' or transducer housing 22, 22' to either ambient radiation or to wavelengths of radiation that are emitted by infrared emitter 252, radiation source ~~256,~~ 256, 256', or excited luminescable material 232.

Please amend paragraph **[0135]** as follows:

[0135] Gas concentration monitoring portion 108 also includes a first axially aligned window 116 and a second axially aligned window 118 (shown in FIG. 17 only) to allow an infrared radiation beam to travel from an infrared radiation emitter ~~(*See* FIG. 1)~~ (*see* FIG. 1) in the transducer housing transversely through a sampling chamber 114 in airway adapter 100 for monitoring gases, such as CO_2, N_2O, and anesthetic agents, as discussed previously herein.